

Application No. 10/733,490
Response to Office Action

Customer No. 01933

Listing of Claims:

Claims 1 and 2 (Canceled).

3. (New) A plasma arc machining method in which a workpiece is pierced by a plasma arc and is cut from a piercing position, the plasma arc being formed by jetting plasma gas from a nozzle of a plasma torch such that the plasma arc is formed between an electrode of the plasma torch and the workpiece, said method comprising:

positioning the plasma torch at an initial height with respect to the workpiece, said initial height being less than or substantially equal to a cutting height of the plasma torch with respect to the workpiece at which a cutting operation is performed, and said initial height being at a position at which a double arc does not occur;

forming a main arc between the electrode and the workpiece by initiating a pilot arc between the electrode and the nozzle to form the main arc;

relatively moving the plasma torch and the workpiece, while maintaining the main arc, to position the plasma torch at a piercing height with respect to the workpiece to perform a piercing operation, the piercing height being larger than the initial height;

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maintaining the main arc while the plasma torch is positioned at the piercing height, until completion of the piercing operation; and

25 relatively moving the plasma torch and the workpiece to position the plasma torch at the cutting height to perform the cutting operation, after the completion of the piercing operation.

4. (New) The plasma arc machining method according to claim 3, wherein a semiconductor switch is provided in a pilot current circuit in a line that leads to the nozzle to supply a pilot current, and wherein the pilot current is cut off by the
5 semiconductor switch immediately after transfer of the pilot arc into the main arc.